

Appl. No. 09/751,792

Amdt. dated 04/16/2005

Reply to Office action of 01/26/2005

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended):

A method comprising:

receiving a plurality of data units along a plurality of virtual connections in a network,  
each virtual connection of said plurality of virtual connections having a predetermined  
unit rate;

storing each of said plurality of data units in one of a plurality of class of service buffers,  
the one of the plurality of class of service buffers being selected by the predetermined  
unit rate of the virtual connections on which the data unit was received; and

attaching a Theoretical Departure Time (TDT) variable buffer parameter to each one of  
the plurality of class of service buffers;

determining a group of eligible buffers from the plurality of class of service buffers, the  
eligible buffers having a TDT that is not later than a current time;

selecting a selected buffer from the eligible buffers, the selected buffer having a highest  
predetermined unit rate of the eligible buffers; and

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transmitting a data unit from the selected buffer, ~~of said plurality of data units having a data unit rate higher than said predetermined unit rate of said each virtual connection at predetermined time intervals,~~

2. (original):

The method according to claim 1, wherein said network is an Asynchronous Transfer Mode Network.

3. (cancelled)

4. (currently amended):

The method according to claim 1, 3, wherein said storing further comprises storing said predetermined unit rate of said each virtual connection in descending order, ~~order in said table.~~

5. (cancelled)

6. (original):

The method according to claim 1, wherein said receiving further comprises receiving said plurality of data units in a line card including at least one service group interface having a plurality of classes of service.

7. (currently amended):

The method according to claim 6, wherein said ~~receiving~~ storing further comprises ~~receiving~~ storing said plurality of data units in ~~a~~ said plurality of class of service buffers within said at

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least one service group interface, each class of service buffer corresponding to one class of service of said plurality of classes of service.

8. (original):

The method according to claim 1, wherein said plurality of data units further comprises cells.

9. (currently amended):

The method according to claim 7, wherein said ~~transmitting-storing~~ further comprises:

selecting a service group interface from said at least one service group interface corresponding to one virtual connection of said plurality of virtual connections having said data-predetermined unit rate; and

selecting one class of service buffer within said service group interface, said class of service buffer storing said data unit.

10. (currently amended):

The method according to claim 9, wherein selecting a selected buffer ~~said service group interface~~ further comprises determining each service group interface of said at least one service group interface having a ~~departure time parameter value lower than or equal to a~~ TDT that is not later than the current time. time-value.

11. (currently amended):

The method according to claim 9, wherein selecting ~~said one class of service~~ the selected buffer further comprises determining each class of service buffer within said service group

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interface having a ~~departure time buffer parameter value lower than or equal to a~~ TDT that is not later than the current time. ~~time value.~~

12. (currently amended):

The A method according to claim 1, further comprising:

~~detecting an empty buffer of a~~ the plurality of class of service buffers; and buffers storing data received along a plurality of virtual connections in a network;

~~comparing a time counter corresponding to each buffer of said plurality of buffers to determine a service buffer ready to be processed; and~~

~~updating an empty TDT time counter corresponding to said empty buffer based on said time counter of said service~~ a TDT of the selected buffer.

13. (currently amended):

The method according to claim 12, wherein said updating further comprises updating said empty TDT time counter ~~corresponding to said empty buffer to said TDT time counter of said service-selected buffer~~, if said empty TDT time counter is lower than said TDT time counter of said service-selected buffer.

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14.-16. (cancelled)

17. (currently amended):

The method according to claim 12, further comprising maintaining said empty TDT, ~~time counter~~, if said empty TDT ~~time counter~~ is higher than said TDT ~~time counter~~ of said service selected buffer.

18. (cancelled)

19. (currently amended):

A computer readable medium containing executable instructions which, when executed in a processing system, cause the system to perform a method comprising:

receiving a plurality of data units along a plurality of virtual connections in a network, each virtual connection of said plurality of virtual connections having a predetermined unit rate;

storing each of said plurality of data units in one of a plurality of class of service buffers, the one of the plurality of class of service buffers being selected by the predetermined unit rate of the virtual connections on which the data unit was received; units; and

attaching a Theoretical Departure Time (TDT) variable buffer parameter to each one of the plurality of class of service buffers;

determining a group of eligible buffers from the plurality of class of service buffers, the eligible buffers having a TDT that is not later than a current time;

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selecting a selected buffer from the eligible buffers, the selected buffer having a highest predetermined unit rate of the eligible buffers; and  
transmitting a data unit from the selected buffer, of said plurality of data units having a data unit rate higher than said predetermined unit rate of said each virtual connection at predetermined time intervals.

20. (original):

The computer readable medium according to claim 19, wherein said network is an Asynchronous Transfer Mode Network.

21. (cancelled)

22. (currently amended):

The computer readable medium according to claim 19, 21, wherein said storing further comprises storing said predetermined unit rate of said each virtual connection in descending order, order in said table.

23. (cancelled)

24. (original):

The computer readable medium according to claim 19, wherein said receiving further comprises receiving said plurality of data units in a line card including at least one service group interface having a plurality of classes of service.

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25. (currently amended):

The computer readable medium according to claim 24, wherein said ~~receiving-storing~~ further comprises ~~receiving-storing~~ said plurality of data units in ~~a-said~~ plurality of class of service buffers within said at least one service group interface, each class of service buffer corresponding to one class of service of said plurality of classes of service.

26. (original):

The computer readable medium according to claim 19, wherein said plurality of data units further comprises cells.

27. (currently amended):

The computer readable medium according to claim 25, wherein said ~~transmitting-storing~~ further comprises:

selecting a service group interface from said at least one service group interface corresponding to one virtual connection of said plurality of virtual connections having said ~~data-predetermined~~ unit rate; and  
selecting one class of service buffer within said service group interface, said class of service buffer storing said data unit.

28. (currently amended):

The computer readable medium according to claim 27, wherein selecting a selected buffer ~~said service-group interface~~ further comprises determining each service group interface of

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said at least one service group interface having a ~~departure time parameter value lower than or equal to a~~ TDT that is not later than the current time. ~~time value.~~

29. (currently amended):

The computer readable medium according to claim 27, wherein selecting ~~said one class of service~~ the selected buffer further comprises determining each class of service buffer within said service group interface having a ~~departure time buffer parameter value lower than or equal to a~~ TDT that is not later than the current time. ~~time value.~~

30. (currently amended):

The A-computer readable medium according to claim 19, containing executable instructions which, ~~when executed in a processing system, cause the system to perform a method further~~ comprising:

detecting an empty buffer of ~~a~~ the plurality of class of service buffers; and ~~buffers storing data received along a plurality of virtual connections in a network;~~

~~comparing a time counter corresponding to each buffer of said plurality of buffers to determine a service buffer ready to be processed; and~~

updating an empty TDT ~~time counter~~ corresponding to said empty buffer based on said ~~time counter of said service a~~ TDT of the selected buffer.

31. (currently amended):

The computer readable medium according to claim 30, wherein said updating further comprises updating said empty TDT ~~time counter~~ corresponding to said empty buffer to said



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~~TDT time counter~~ of said ~~service selected~~ buffer, if said empty ~~TDT time counter~~ is lower than said ~~TDT time counter~~ of said ~~service selected~~ buffer.

32.-34. (cancelled)

35. (currently amended):

The computer readable medium according to claim 30, wherein the method further comprises maintaining said empty ~~TDT time counter~~, if said empty ~~TDT time counter~~ is higher than said ~~TDT time counter~~ of said ~~service selected~~ buffer.

36. (cancelled)

37. (currently amended):

A system comprising:

means for receiving a plurality of data units along a plurality of virtual connections in a network, each virtual connection of said plurality of virtual connections having a predetermined unit rate;

means for storing each of said plurality of data units in one of a plurality of class of service buffers, the one of the plurality of class of service buffers being selected by the predetermined unit rate of the virtual connections on which the data unit was received; and

means for attaching a Theoretical Departure Time (TDT) variable buffer parameter to each one of the plurality of class of service buffers;

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means for determining a group of eligible buffers from the plurality of class of service

buffers, the eligible buffers having a TDT that is not later than a current time;

means for selecting a selected buffer from the eligible buffers, the selected buffer having

a highest predetermined unit rate of the eligible buffers; and

means for transmitting a data unit from the selected buffer, of said plurality of data units

having a data unit rate higher than said predetermined unit rate of said each virtual

connection at predetermined time intervals.

38. (original):

The system according to claim 37, wherein said network is an Asynchronous Transfer Mode Network.

39. (cancelled)

40. (currently amended):

The system according to claim 37, 39, further comprising means for storing said predetermined unit rate of said each virtual connection in descending order, order in said table.

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41. (cancelled)

42. (original):

The system according to claim 37, further comprising means for receiving said plurality of data units in a line card including at least one service group interface having a plurality of classes of service.

43. (currently amended):

The system according to claim 42, ~~further comprising wherein said means for receiving~~ storing is further for storing said plurality of data units in ~~a said plurality of class of service~~ buffers within said at least one service group interface, each class of service buffer corresponding to one class of service of said plurality of classes of service.

44. (original):

The system according to claim 37, wherein said plurality of data units further comprises cells.

45. (original):

The system according to claim 43, further comprising:

means for selecting a service group interface from said at least one service group interface corresponding to one virtual connection of said plurality of virtual connections having said ~~data-predetermined~~ unit rate; and

means for selecting one class of service buffer within said service group interface, said class of service buffer storing said data unit.

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46. (currently amended):

The system according to claim 45, further comprising means for determining each service group interface of said at least one service group interface having a ~~departure time parameter value lower than or equal to a current time value.~~

47. (currently amended):

The system according to claim 45, further comprising means for determining each class of service buffer within said service group interface having a departure time buffer parameter value lower than or equal to a TDT that is not later than the current time. ~~time value.~~

48. (currently amended):

The A-system according to claim 37, further comprising:

means for detecting an empty buffer of ~~a the plurality of class of service buffers; and~~

~~buffers storing data received along a plurality of virtual connections in a network;~~

~~means for comparing a time counter corresponding to each buffer of said plurality of~~

~~buffers to determine a service buffer ready to be processed; and~~

means for updating an empty TDT time counter ~~corresponding to said empty buffer based~~

~~on said time counter of said service~~ a TDT of the selected buffer.

49. (currently amended):

The system according to claim 48, further comprising means for updating said empty TDT

~~time counter corresponding to said empty buffer to said~~ TDT time counter ~~of said service~~

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selected buffer, if said empty ~~TDT time counter~~ is lower than said ~~TDT time counter~~ of said ~~service-selected~~ buffer.

50.-52. (cancelled)

53. (currently amended):

The system according to claim 48, further comprising means for maintaining said empty ~~TDT time counter~~, if said empty ~~TDT time counter~~ is higher than said ~~TDT time counter~~ of said selected service buffer.

54. (cancelled)

55. (currently amended):

A system comprising:

a memory module for receiving a plurality of data units along a plurality of virtual connections in a network, each virtual connection of said plurality of virtual connections having a predetermined unit rate;

a plurality of class of service buffers within the memory module for storing each of said plurality of data units in one of the plurality of class of service buffers, the one of the plurality of class of service buffers being selected by the predetermined unit rate of the virtual connections on which the data unit was received; and

a scheduler module coupled to said memory module for

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attaching a Theoretical Departure Time (TDT) variable buffer parameter to each

one of the plurality of class of service buffers;

determining a group of eligible buffers from the plurality of class of service

buffers, the eligible buffers having a TDT that is not later than a current time;

selecting a selected buffer from the eligible buffers, the selected buffer having a

highest predetermined unit rate of the eligible buffers; and

for transmitting a data unit from the selected buffer, of said plurality of data units

having a data unit rate higher than said predetermined unit rate of said each virtual

connection at predetermined time intervals.

56. (original):

The system according to claim 55, wherein said network is an Asynchronous Transfer Mode Network.

57. (cancelled)

58. (currently amended):

The system according to claim 54, 57, wherein said scheduler module further stores said predetermined unit rate of said each virtual connection in descending order, order in said table.

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59. (cancelled)

60. (original):

The system according to claim 55, wherein said memory module further includes at least one service group interface having a plurality of classes of service.

61. (currently amended):

The system according to claim 60, wherein said memory module further ~~receives-stores~~ said plurality of data units in ~~a-said~~ plurality of class of service buffers within said at least one service group interface, each class of service buffer corresponding to one class of service of said plurality of classes of service.

62. (original):

The system according to claim 55, wherein said plurality of data units further comprises cells.

63. (original):

The system according to claim 61, wherein said scheduler module further selects a service group interface from said at least one service group interface corresponding to one virtual connection of said plurality of virtual connections having said ~~data-predetermined~~ unit rate and selects one class of service buffer within said service group interface, said class of service buffer storing said data unit.

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64. (currently amended):

The system according to claim 63, wherein said scheduler module further determines each service group interface of said at least one service group interface having a ~~departure time parameter value lower than or equal to a~~ TDT that is not later than the current time. ~~time value.~~

65. (currently amended):

The system according to claim 63, wherein said scheduler module further determines each class of service buffer within said service group interface having a ~~departure time buffer parameter value lower than or equal to a~~ TDT that is not later than the current time. ~~time value.~~

66. (currently amended):

The A-system according to claim 55, further comprising:

a scheduler module for detecting an empty buffer of a ~~the plurality of class of service buffers,~~ plurality of class of service buffers, ~~buffers storing data received along a plurality of virtual connections in a network,~~ for comparing a time counter corresponding to each buffer of said plurality of buffers to determine a service buffer ready to be processed and for updating an empty TDT time counter corresponding to said empty buffer based on said time counter of said service a TDT of the selected buffer.



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67. (currently amended):

The system according to claim 66, wherein said scheduler module further updates said empty ~~TDI time counter corresponding to said empty buffer to said TDI time counter of said~~ service-selected buffer, if said empty ~~TDI time counter~~ is lower than said ~~TDI time counter~~ of said service-selected buffer.

68.-70. (cancelled)

71. (currently amended):

The system according to claim 66, wherein said scheduler module further maintains said empty ~~TDI time counter~~, if said empty ~~TDI time counter~~ is higher than said ~~TDI time counter~~ of said service-selected buffer.

72. (cancelled)